CHAPTER 2
OVERVIEW OF DIRECT SEEDING

INTRODUCTION

Information in this chapter will expand the knowledge and increase the level of confidence of anyone who wants to try direct seeding and be successful.

As in any new venture, it is best to glean as much information as possible from others who have acted as innovators or early achievers. These early Johnny Appleseeds have provided a trial and error pathway toward achieving a high level of success with direct seeding of hardwoods.

Direct seeding of hardwoods is not new. It has just not been as widely accepted as planting seedlings (which, by the way, started from seed).

This chapter is not meant to be all-inclusive and give you answers to all your direct seeding questions. Subsequent chapters will provide much additional and specific information.

This chapter will provide a practical overview to an activity that squirrels, wind, and water have done for years. Surely, we can do it better!

Top: Broadcast seeding with fertilizer spreader
Bottom: Row seeding with tree planters.

EXAMPLES OF DIRECT SEEDING

This section provides contacts in and out of Illinois who have experience with successful seeding projects. Call them to "talk out" any particular aspect of planning, collecting, planting or establishing direct seeded tracts.

Illinois

Contact name	Location and Telephone Number	Type of activity
Mark Cender	NRCS Soil Conservation Technician, Champaign, IL 217/377-9740	direct seeding
Steve Felt	IDNR District Forester, Cambridge, IL 309/937-2122 email: sfelt@dnrmail.state.il.us	direct seeding (mostly walnut)
Ken Hoene	Timber Services RR 1 Box 247A Shelbyville, IL 62565 217/774-5611	direct seeding, seed collection, seeding equipment
Jeff Hudgens	Prairie Hills Forestry Consulting 321 University Drive Macomb, IL 61455 309/833-4747	direct seeding, seed collection, seeding equipment
David Johnson	IDNR District Forester, Fairfield, IL 618/847-3781 email: djohnson@dnrmail.state.il.us	direct seeding
Dave Maginel	The Nature Conservancy, Ullin, IL 618/634-2524	seed collection, direct seeding (mostly oaks)
Bart Pals	NRCS District Conservationist 2301 Hoffman Drive Effingham, IL 62401 217/347-7107 x3 email: Bart.Pals@il.usda.gov	seed collection, direct seeding
Bob Sloan	AISWCD Forestry Committee Chair RR 1, Box 152 Washburn, IL 61570 309/246-8391 email: rsloan@joysta.com	seed collection broadcast seeding
Randy Timmons	IDNR District Forester, Oglesby, IL 815/224-4048 email: rtimmons@dnrmail.state.il.us	seed collection, seed inspection

Adjoining States

Contact name	Location and Telephone Number	Type of activity
Steve Bertjens	RC&D Coordinator, Platteville, WI 608/348-3235 Steve.Bertjens@wi.usda.gov	seed collection, direct seeding
Gary Beyer	IA DNR Forester, Charles City, IA 515/228-6611 email: Gary.Beyer@dnr.state.ia.us	seed collection, broadcast seeding
Larry Krotz	Tree Farmer, Washington, IA 319/653-4959 email: lkrotz@lisco.com	seed collection, high volume seeding
John Olds	One Stop Forestry P.O. Box 916 Postville, IA 52162-0916 319/864-3586 or -7112, fax -7113	seed collection, broadcast seeding
Larry Owen	Consultant, Terre Haute, IN 812/466-4445 website: www.forest-management.com email: Larry@forest-management.com	direct seeding
Bob Petrzelka	Geode Forestry 3002A Winegard Drive Burlington, IA 52601 319/752-2291 email: bpivo@lisco.com	seed collection, row seeding, equipment
John Seifert	Purdue Univ., Butlerville, IN 812/458-6978, fax -6979 purfor@seidata.com	herbicides
Stan Tate	IA DNR Forester, Wapello, IA 319/523-2216 email: Stanley.Tate@dnr.state.ia.us	seed collection, equipment, row seeding

Opportunities and Challenges

This section lists some important considerations as you begin the process of planning with individuals interested in direct seeding. The listings under Opportunities and Challenges are not all-inclusive, but should provide "food for thought" items to help you avoid pitfalls or stumbling blocks as you proceed with collection, planting and establishment.

Opportunities

- As long as there is adequate soil moisture, direct seeding can take place in any season.
- Direct seeding offers the potential for reduced costs compared to seedling planting.
- Direct seeding is often faster and can cover more acres than other kinds of planting.
- Direct seeding is more practical when using native seed sources; a wide variety of species can easily be planted.
- Direct seeding is often easier than planting tree seedlings.
- Tree seed is normally more readily available than other kinds of planting stock.
- Direct seeding allows for more normal root development (avoids seedling transplant shock).
- Fall seeding allows for natural in-the-ground seed stratification that most seeds need to germinate.
- Planting nuts or seeds into corn or soybeans (minimum 30 inch row width) has shown excellent first year results.
- Temporary cereal grain cover crops (oats, rye or wheat) work well as a row planting nurse crop and provide weed control for at least part of the first growing season.
- Potentially higher tree populations reduce the need for weed control and promote self-pruning.

Challenges

- Residual chemicals, late freezes, poor species to site matching, animal damage, flooding with high water temperatures or ice, improper seed storage, drought, poor quality seed, and weed competition may reduce the success of direct seeding.
- Competing vegetation, especially grasses, must be controlled for a minimum of 3 years. Mowing is not an effective or acceptable grass control practice by itself.
- Several passes over the field with various types of equipment may be necessary, especially when broadcast seeding.
- Seed of desired species may not always be available locally and quality varies year to year.
- Cover crops add expense and may not always be useful.
- If a variety of species are needed, they may not be available at the same time due to differences in seed ripening dates. Species that drop early may need to be stored.
- If acorns from the white oak group are used, planting is best done in fall because acorns are difficult to successfully refrigerate and store more than a few months.
- Effective herbicides may not be readily available for all needs and may be somewhat expensive.
- Improper storage can kill seed.
- Planting density is hard to control and may result in overstocking in some areas and understocking in others.
- Heavy seed predation may occur where rodent populations are high, sometimes resulting in plantation failure.

KEYS TO MAKING IT WORK

This section provides the tried and tested components that most often result in successful nut and seed plantings. Many of these key points are listed in the published articles identified later in references. There are four (4) essentials to follow for increasing the chances of success:

- Site selection and site preparation must provide tree seeds from selected species with an opportunity to sprout, compete, and grow rapidly. Match species to site.
- Plant quality seed at proper depth for species and site.
- Control seed predators.
- Eliminate or control competing vegetation until seedlings are established (this may require 3 years).

Items that will make direct seeding successful:

- Develop a written plan well in advance of seed collection.
- Prepare the planting site. Do not plant in grass or weeds.
- Plant quality seed on appropriate site.
- Control weed competition for at least a 3-year establishment period.
- Plant at proper depth (a rule of thumb is 2x the seed diameter) and get good seed-soil contact.
- Generally, plant walnuts 2 to 5 inches deep and acorns 1 to 3 inches deep (use shallower planting with high soil moisture and low predator pressure).
- Minimize predation pressure. Do not plant in good mouse or squirrel habitat without habitat modification or seed protection.
- Plant promptly after seed collection or store in a controlled temperature/ moisture environment.
- Do not plant seed from sources more than 200 miles from your planting site.
- Collect only mature, ripe seed. Perform a cut test on at least 10 seeds/bushel; inspect for filled seed, weevil damage, and proper color.
- Use a variety of species and a variety of seed sources (different seed trees of same species). Mix the seed before planting.
- Be patient; seed germination and seedling emergence will be quite variable and may not be complete even by mid-summer. Final population may be higher than it first appears.

NOTE: *If preparations for seeding do not go well, wait another year rather than start wrong. Maintain records showing: what, where, when, how, and whom. Remember the bottom line: the most expensive planting is one that fails!*

REFERENCES

*__Direct Seeding.__ Nov. 1999, Iowa Forestry Extension Note F-363. Wray, P.H., G. Beyer, and S. Tate. 2 pp.

*__Direct Seeding.__ 1998, One-Stop Forestry, Postville, IA. 3 pp.

*__Direct Seeding Hardwoods on the Cache River Joint Venture.__ 1997. Maginel, D. and M.D. Hutchison. The Nature Conservancy, Ullin, IL. 3 pp.

__Growing Illinois Trees From Seed.__ 1983. Circular 1219. C.E.S., College of Agriculture, University of Illinois, Urbana-Champaign. 32 pp.

__Growing Trees from Seed.__ Spring 1996, Mike Bolin. *IL Steward Magazine*, 6 pp.

__* "Nuts to Forestry: New Technology for New Forests."__ Mar.-April 1996, Stan Tate. *Iowa Conservationist*. 5 pp.

__Seed Collection Manual.__ circa 1980. Illinois Department of Natural Resources, Division of Forest Resources. 23 pp.

__"Seven Rules for Direct Seeding Success."__ Personal Communications from Stan Tate, Iowa DNR, Forestry Division, Wapello, IA.

**Copy provided in Appendix of Direct Seeding Handbook.*

NOTE: *Copies of all of the above are available for up to a 2-week loan from the NRCS State Agroforester. Some references may also be available from IDNR District Foresters, the IDNR Forest Management Staff Forester, and the State Cooperative Extension Forester.*